

REMARKS

The Office rejects claims 21, 22, 24, 29, 30, and 33 and objects to claims 25-28 in the subject application. Claims 1-20, 31, and 32 are subject to restriction. Applicant amends claim 21 in this Response. Claims 21, 22, 24-30, and 33 (2 independent claims and 10 total claims) remain pending in the application.

Support for the various amendments may be found in the originally filed specification, claims, and figures. For example, support for the amendment to claim 21 can be found in Figures 23 and 24 of the subject application. No new matter has been introduced by these amendments. Reconsideration of this application is respectfully requested.

35 U.S.C. § 102 REJECTIONS

The Examiner rejects claims 21, 24, and 29 under 35 U.S.C. § 102(b) as allegedly being anticipated by a previously cited reference Hayakawa (JP-06-072253, published March 15, 1994, issued to Kenwood Corp.). Applicant respectfully traverses the rejection.

The Examiner concedes that Hayakawa discloses a vehicle indoor sound system.¹ Accordingly, Hayakawa fails to teach, advise, or suggest "the on-vehicle sound-amplification apparatus is located outside the vehicle interior" as recited in claim 21 (and claims 24 and 29, which variously depend from claim 21) (emphasis added). As such, Hayakawa fails to disclose that the dipole sound source is "located outside the vehicle interior".

Thus, Hayakawa fails to teach, advise, or suggest one or more of the missing claimed elements, so that claims 21, 24, and 29 are patentable over this reference.

35 U.S.C. § 103 REJECTIONS

Hayakawa in view of Weingartner

The Examiner rejects claim 22 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hayakawa in view of a newly cited reference Weingartner (U.S.

¹ Office Action mailed September 16, 2005, page 2.

Patent No. 4,594,729, issued June 10, 1986, assignee is Neutrik Aktiengesellschaft). Applicant respectfully traverses the rejection.

The Examiner concedes that Hayakawa fails to disclose a non-directional sound source provided in a vicinity of a center of the dipole sound source.² The Examiner alleges that Weingartner discloses reproduction of sound in a vehicle loudspeaker array with signal dependent radiation signal patterns and the concept of a speaker placed in a dipole setup (HLM).³

But Weingarten discloses a differential signal S is turned 90° and radiates toward the two opposite sides of the rear end of the motor vehicle 8^{IV}. This can be achieved by a radiator of the first order, a [single] speaker HLM located in an open housing, in which the front and rear sides of the membrane are coupled in the air.⁴

First, Weingartner only describes a single speaker, not two (i.e., a dipole pair).

Second, the speaker HLM in Weingartner is not a dipole sound source. Rather, it is a single loudspeaker arranged in the first order (i.e., the loudspeaker is either arranged in an enclosure with an infinite baffle or in free air). In Weingartner, the loudspeaker is arranged in free air so that "the front and rear sides of the membrane are coupled in the air".⁵ Applicant attaches a copy of a web page as evidence that to those skilled in the art a "so called radiator of the first order" is merely a single non-directional loudspeaker (sound source) enclosed as infinite baffle or free-air.⁶

Accordingly, Weingartner does not describe that the speaker HLM is a dipole sound source, nor does Weingartner otherwise describe a dipole sound source. For example, figure 6 of Weingartner does not show a dipole sound source.

Thus, Hayakawa in view of Weingartner fails to teach, advise, or suggest "a non-directional sound source provided in a vicinity of a center of the dipole sound source" as recited in claim 22, so that claim 22 is patentable over these references.

² Office Action mailed September 16, 2005, page 5.

³ Office Action mailed September 16, 2005, page 5.

⁴ Weingartner, column 4, line 64 to column 5, line 2 (emphasis added).

⁵ Weingarten, column 5, lines 1-2 (emphasis added).

⁶ See http://www.mr2.com/FAQ/rac-faq_4.html, page 3.

Hayakawa in view of Dodge

The Examiner also rejects claim 30 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hayakawa in view of a previously cited reference Dodge (U.S. Patent No. 4,460,061, issued July 17, 1984 to Pennwalt Corporation).

Based on the above discussion of Hayakawa and claim 21, claim 30 (which variously depends from claim 21) is also patentable over Hayakawa in view of Dodge.

Hayakawa in view of Sharp

The Examiner rejects claim 33 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hayakawa in view of a previously cited reference Sharp (U.S. Patent No. 3,781,475, issued December 25, 1973 to Columbia Broadcasting System, Inc.).

Based on the above discussion of Hayakawa and claim 21, claim 33 (which variously depends from claim 21) is also patentable over Hayakawa in view of Sharp.

CONCLUSION

Thus, the Applicant respectfully submits that the present application is in condition for allowance. Reconsideration of the application is thus requested. Applicant invites the Office to telephone the undersigned if he or she has any questions whatsoever regarding this Response or the present application in general.

Respectfully submitted,

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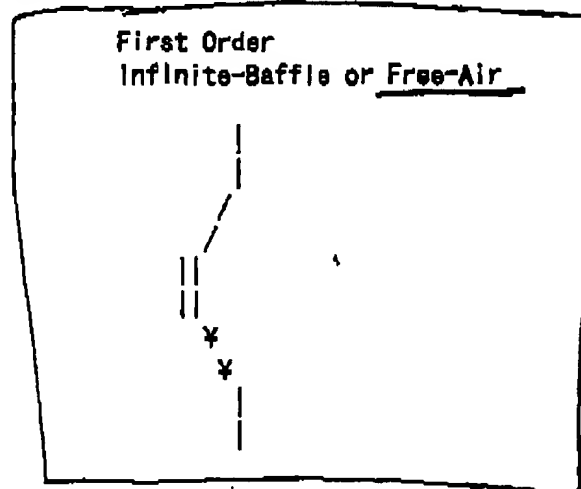
differences at the same power level. When it comes to subwoofer performance, the driver's sensitivity is irrelevant unless you are also specifying a box volume.

An efficient sub requires a larger box to achieve equivalent extension to a less efficient sub. In a small box, the less efficient sub will actually be LOUDER at low frequencies at the SAME POWER as the more efficient sub.

Linear excursion is a very good indicator of ultimate output capability (given sufficient power to drive the speaker to that point.) To make sound you must move air; therefore, the more air you move, the more sound you make. When comparing two speakers of equal surface area, the one with greater excursion capability will play louder given sufficient power.

4.3 What are the enclosure types available? [JLD, JG]

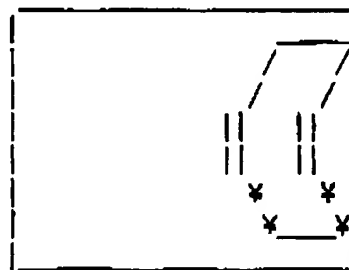
Only the order of the enclosure itself is shown here. The addition of a crossover network increases the order of the system by the order of the crossover. Example: If a First-Order, 6dB/Oct. crossover (single inductor in series with the speaker) is used with a Fourth Order enclosure, the total system is a fifth order. Note: Air volumes and ratios shown here may not be to scale. This is designed to provide order information only.



Second Order
Acoustic or Air-Suspension
or Sealed



Second Order
Isobaric* Acoustic-Suspension
(Compound Loaded)



Fourth Order

Fourth Order

Fourth Order